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**THE MAIN OBSTACLES AND PROSPECTS FOR OPTIMIZING
COOPERATION BETWEEN THE BRICS COUNTRIES
IN THE FIELD OF INFORMATION TECHNOLOGY**

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This article examines the obstacles to and the prospects for deeper cooperation among the BRICS countries in the field of information technology. It argues that digital sovereignty is at once the main motive for such cooperation and its principal constraint. The study reviews the institutional architecture that BRICS has built since 2017, including the Partnership on the New Industrial Revolution, the Digital BRICS Task Force and the remote sensing satellite constellation, and then identifies five obstacles: structural heterogeneity, divergent data-governance regimes, technological dependence on Western suppliers, the rivalry between China and India, and weak institutionalization. It then assesses the most promising tracks for optimization, among them cross-border payment infrastructure, a shared data-governance framework, digital public infrastructure, sovereign artificial intelligence and space-based data. The article concludes that the prospects are real but uneven, and that progress depends less on technical capacity than on a governance design that preserves national control while allowing systems to interoperate.

Keywords: BRICS, information technology, digital sovereignty, data governance, technological cooperation, digital public infrastructure, semiconductors, de-dollarization, multipolarity, Global South.

**ОСНОВНЫЕ ПРЕПЯТСТВИЯ И ПЕРСПЕКТИВЫ
ОПТИМИЗАЦИИ СОТРУДНИЧЕСТВА СТРАН БРИКС
В СФЕРЕ ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ**

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В статье рассматриваются препятствия и перспективы углубления сотрудничества стран БРИКС в сфере информационных технологий. Автор утверждает, что цифровой суверенитет является одновременно главным

мотивом такого сотрудничества и его основным ограничителем. Анализируется институциональная архитектура, выстроенная БРИКС с 2017 г., включая партнерство по новой промышленной революции, цифровую целевую группу БРИКС и спутниковую группировку дистанционного зондирования, после чего выделяются пять препятствий: структурная неоднородность, расхождение режимов управления данными, технологическая зависимость от западных поставщиков, соперничество Китая и Индии, а также слабая институционализация. Затем оцениваются наиболее перспективные направления оптимизации: трансграничная платёжная инфраструктура, общая система управления данными, цифровая публичная инфраструктура, суверенный искусственный интеллект и космические данные. В статье делается вывод, что перспективы реальны, но неравномерны, и что прогресс зависит не столько от технического потенциала, сколько от модели управления, сохраняющей национальный контроль при обеспечении совместимости систем.

Ключевые слова: БРИКС, информационные технологии, цифровой суверенитет, управление данными, технологическое сотрудничество, цифровая публичная инфраструктура, полупроводники, дедолларизация, многополярность, глобальный Юг.

Introduction

Over the past decade BRICS has changed from a label for a few fast-growing economies into a standing platform that coordinates positions across much of the Global South. The enlargements of 2024 and 2025, which brought in Egypt, Ethiopia, Iran, the United Arab Emirates and Indonesia, widened both the membership and the agenda [1; 6]. Information technology now occupies a prominent place on that agenda. The member states share a recurring grievance about the existing digital order: its core infrastructure, technical standards and supply chokepoints are concentrated in a handful of Western jurisdictions, and that concentration has repeatedly been turned into a lever of political pressure. Within BRICS, cooperation

in information technology is therefore framed as a question of strategic autonomy rather than as ordinary commercial exchange.

This framing sets up the problem the present article addresses. There is a wide distance between the bloc's stated ambition of a self-reliant digital ecosystem and what it has actually managed to construct. The aim of the study is to identify the main obstacles that slow technological cooperation among BRICS states and to weigh the prospects for optimizing it. The two questions are treated together, because the obstacles and the openings come from the same source. The argument is that digital sovereignty, the principle most often invoked to justify cooperation, also works as its principal constraint, and that a realistic path toward deeper cooperation has to be designed around that tension rather than against it.

Information technology is the field where these stakes are sharpest. A state that depends on foreign processors, foreign cloud services and a foreign payment-messaging network has handed potential adversaries a set of switches it cannot reach. The events of the past few years, from export controls on advanced chips to the disconnection of Russian banks from international messaging, have shown member governments how those switches can be used. This is why the digital agenda has moved from the margins of BRICS communiqués toward their centre, and why the gap between ambition and delivery is worth examining closely.

The analysis draws on BRICS summit declarations and economic-partnership documents, on the output of the bloc's technology bodies, and on the secondary literature in political economy and digital governance. Its contribution is to read the obstacles and the prospects as a single problem of governance design, instead of cataloguing initiatives or predicting the bloc's collapse. The period of interest runs from the launch of structured industrial cooperation in 2017 to the Indian chairship of 2026.

The institutional architecture of BRICS technological cooperation

Technological cooperation in BRICS rests on an institutional layer that has thickened considerably since 2017. Its central structure is the Partnership on the New Industrial Revolution (PartNIR), proposed by China at the twelfth summit in 2020

and established as a working track in 2021 to coordinate member states' responses to industrial digitalization. PartNIR operates through an Innovation Centre in Xiamen and a cluster of attached bodies, among them the Institute for Digital Economy and Artificial Systems, founded jointly by Xiamen University and Lomonosov Moscow State University [q.v.: 12].

Around this core sit several specialised mechanisms. The Digital BRICS Task Force coordinates work on the digital economy and digital governance; the BRICS Institute of Future Networks supports cooperation on emerging network technologies; and the iBRICS network and a Digital Economy Working Group cover further parts of the agenda. The Strategy for BRICS Economic Partnership 2025 ties these bodies to a shared objective of accelerating the digital transformation of member economies and channels financing from the New Development Bank toward that end [q.v.: 14]. A Digital Economy Partnership Framework adopted in 2022 was meant to give this cluster a common reference point.

Cooperation also extends into adjacent domains where data is the shared resource. In 2021 the heads of the BRICS space agencies signed an agreement establishing a virtual constellation of remote sensing satellites, pooling earth-observation data from six existing platforms, and in 2022 a Joint Committee on Space Cooperation was created to run it [7; 8].

What this architecture lacks are a body with the authority to set binding standards, allocate money and hold members to their commitments between summits. The centres and task forces convene, study and recommend, but each member implements, or declines to implement, on its own terms. The contrast with a supranational executive such as the European Commission is instructive, and it helps explain why a dense map of institutions has produced comparatively few interoperable systems. This architecture is real, then, but it is overwhelmingly consultative. It produces declarations, pilot projects and forums rather than binding commitments, and that character shapes both the limits described in the next section and the openings discussed later [9].

The main obstacles

Structural heterogeneity and the internal digital divide

The first obstacle is the sheer unevenness of digital development inside the bloc. China stands far ahead of the others in hardware manufacturing, platform reach and patent output, and it supplies the electronics, telecommunications equipment and machinery that several partners import [2]. India's strength lies in software services and in a distinctive model of digital public infrastructure rather than in hardware. Russia retains deep engineering and mathematical talent but operates under sanctions that cut it off from much of the Western supply chain. Brazil and South Africa have large domestic markets yet depend heavily on imported technology, and the newer members range from the capital-rich United Arab Emirates to Ethiopia, where basic connectivity is still limited.

This unevenness is not only a matter of capacity; it shapes the politics of cooperation. When partners are this unequal, a joint project tends to slide into dependence on the strongest member. The point is visible in the trade data: bilateral India–China trade approached 128 billion dollars in recent years, with India running a deficit above 100 billion, as China sold computers, smartphones and semiconductors while India exported raw materials. Indian commentators have warned that a BRICS digital agenda led by Chinese infrastructure and standards would deepen external dependence rather than reduce it, merely changing its address [2]. Heterogeneity therefore does double work as an obstacle, limiting what the weaker members can contribute and making the stronger member's leadership a source of suspicion.

Divergent data-governance regimes

The second obstacle is regulatory. The member states have adopted sharply different philosophies of data governance, and these differences obstruct the cross-border data flows on which any shared digital service depends. China and Russia combine strict data-localization requirements with broad state access to data. Russia introduced localization in 2015 and a Sovereign Internet Law in 2019, and has since pursued a managed national segment of the network [q.v.: 4]. Brazil and South Africa moved in the opposite direction, enacting rights-based regimes, the General Data

Protection Law and the Protection of Personal Information Act, closely modelled on the European Union's framework. India occupies a middle position with its data-protection statute of 2023.

These are not minor technical discrepancies. They reflect opposed conceptions of the relationship between the citizen, the firm and the state, and they place a single integrated data space beyond political reach [15]. A multinational operating across the bloc faces incompatible compliance demands, and a shared platform would have to satisfy all of them at once. The same divergence appears in the bloc's approach to internet governance. The preference for state-centred control, strongest in Beijing and Moscow, sits awkwardly with the cross-border nature of the network and with the more open models of India, Brazil and South Africa, and the gap complicates any unified position in international forums while raising the risk of fragmentation [q.v.: 4].

Technological dependence and external coercion

The third obstacle is that BRICS does not control the chokepoints of the technologies it wants to develop. Advanced semiconductor manufacturing depends on a small number of firms and locations. A single Dutch company supplies the extreme-ultraviolet lithography systems needed for leading-edge chips, and fabrication is concentrated in Taiwan and South Korea. The United States has used this concentration to impose export controls on China and Russia, restricting their access to advanced chips and to the equipment that makes them [13].

Dependence runs deeper than chips. It extends to cloud platforms, submarine cables and core software, all of which remain largely in Western hands. For Russia and Iran, the constraint is sharper still, because sanctions limit their participation in any system that touches Western infrastructure. The result is a structural paradox. A bloc that frames technological cooperation as a route to autonomy is trying to build that autonomy using inputs it must still source from the very actors it wants independence from. Until the members can supply more of the stack themselves, the ceiling on their cooperation is set elsewhere.

Geopolitical frictions and the China-India axis

The fourth obstacle is political. The relationship between China and India is the load-bearing axis of BRICS, and it is strained. The clash in the Galwan Valley in 2020 brought the two armies into lethal contact for the first time in decades and left a lasting trust deficit [q.v.: 17]. The rivalry surfaces inside the grouping's own decisions. During the 2024 enlargement China pushed for the inclusion of Iran and Ethiopia while India preferred candidates such as the United Arab Emirates, and the two capitals continue to disagree about the pace and direction of the bloc's growth [2].

In the technology domain this matters directly. India is reluctant to let Chinese firms set the standards or own the infrastructure of a shared BRICS digital system, and it has at the same time deepened technology cooperation with the United States through bilateral initiatives on critical and emerging technologies. Because BRICS decides by consensus, this reluctance is not merely an attitude; it gives India an effective veto over arrangements that would entrench Chinese leadership. A partnership whose two largest members regard each other as strategic competitors cannot easily agree on common platforms, and information technology, where standards confer durable advantage, is precisely the field where that difficulty bites hardest.

Weak institutionalization

The fifth obstacle is the bloc's own design. BRICS has no permanent secretariat; no binding decision rules and no standing budget. It works by consensus, rotates its chair each year and expresses itself through declarations that commit no one to anything in particular; the Kazan Declaration of 2024 alone ran to well over a hundred provisions. The proliferation of working groups and centres has produced overlap and duplication rather than depth, and many initiatives suffer from thin funding and competing national priorities [9].

Analysts preparing for the Indian chairship have observed that the bloc has functioned mainly as a forum for political coordination rather than as a vehicle for economic integration, and that meaningful cooperation will require predictability and

transparency that the present structure does not supply [11]. For information technology this institutional thinness is a serious handicap. Digital projects need sustained financing, stable standards and a body that can hold members to their commitments between summits. A grouping that produces ambitious text once a year and disperses is poorly suited to the patient, technical work that real cooperation in this field demands.

Prospects for optimizing cooperation

The obstacles are substantial, but they are not uniform across the agenda. Cooperation advances where incentives align and where the design of a project preserves national control. Five tracks stand out, and on each the bloc has already moved beyond rhetoric.

Cross-border payment and financial-messaging infrastructure

The most developed track is financial messaging and cross-border payments, because here the incentive is shared and concrete. Exposure to sanctions and the cost of dollar intermediation give every member, and especially Russia and Iran, a reason to build an alternative. At the Kazan summit in 2024 the bloc advanced the BRICS Cross-Border Payments Initiative and a set of associated projects: a BRICS Pay gateway, a BRICS Bridge messaging mechanism designed to use central-bank digital currencies, and a decentralized cross-border messaging system based on distributed-ledger technology [1; 10]. Consumer-facing functions of BRICS Pay were piloted during the Moscow business forum in October 2024.

The design of this system is instructive. Rather than a single currency or a unified bank, it tries to connect existing national payment channels, such as India's Unified Payments Interface and China's interbank system, and to route each transaction through the most efficient available path [10]. That is cooperation built as an interoperable layer over sovereign systems, not as an integrated whole. The obstacles described earlier still apply, since political trust, technical integration and the absence of a common currency limit how far the system can scale, and observers have judged its near-term feasibility cautiously. Even so, payments show clearly what

cooperation looks like when a genuine shared interest meets a design that leaves national control intact.

A shared framework for data governance

The second track is data governance. The Kazan Declaration called for a fair and equitable global framework for data governance, including rules for cross-border data flows [1], and the Rio summit of 2025 took the first concrete step by setting out a data-economy understanding built on interoperability and portability rather than on harmonization of substantive law [16]. This is the appropriate level of ambition given the regulatory divergence set out above. A framework that allows different national regimes to interoperate, instead of demanding that they converge, is politically reachable in a way that a single data space is not.

The groundwork for such bridging already exists. The comparative research of the CyberBRICS project mapped the cybersecurity and data-protection rules of each member and identified where they can be made compatible [3]. The hard question is whether the members will accept even minimal common commitments on portability and mutual recognition, given how closely they guard control over data. The Rio understanding is a first move; its value will depend on whether it acquires operational substance rather than remaining, like much of the bloc's output, a statement of intent.

Digital public infrastructure

The third track is digital public infrastructure. India has built a layered system of open digital public goods that includes a digital identity, a real-time payment interface and a consent-based data-sharing mechanism, and it has offered to share the underlying templates [6; 7]. At the New Delhi summit of 2021 India proposed a BRICS platform for digital public goods, a repository of open-source applications aimed at the Sustainable Development Goals [11], and digital public infrastructure is a headline priority of the Indian chairship of 2026 [6].

This model suits BRICS cooperation unusually well. Digital public infrastructure is open-source, adaptable to national requirements and sovereignty-preserving by construction, since a state can run the software on its own infrastructure under its own law and retain the data it generates. It therefore offers a

way to cooperate that sidesteps the dispute over data control rather than running straight into it. Where a shared data space provokes the regulatory conflict described earlier, shared software templates do not, which is why this track may travel further than its visibility in the declarations would suggest.

Sovereign artificial intelligence and shared compute

The fourth track is artificial intelligence, which has been raised from a sub-theme to a central pillar of the bloc's technology agenda [7]. Within PartNIR, members have discussed co-developing open-source generative models tuned to BRICS languages and cultural contexts, together with shared computing and data facilities for industrial use. The stated emphasis on technical autonomy, control over data and sovereign digital infrastructure reflects the same logic that runs through the rest of the agenda [5].

The binding constraint here is compute. The chip controls discussed earlier limit access to the hardware that frontier models require, and no member except China can yet supply advanced accelerators at scale. This caps the bloc's ambitions in the most demanding parts of the field. Cooperation on datasets, on language resources for under-served languages and on smaller open models is nonetheless within reach, and it would build shared capability of a kind that is hard for outside actors to switch off. Sovereign artificial intelligence is best read as a long-term aspiration with a few near-term components that are already practical.

Space-based data and connectivity

The fifth track is already operating. The remote sensing satellite constellation agreed in 2021 pools earth-observation data from member states' existing satellites, among them China's Gaofen-6 and Ziyuan III, the Brazil–China CBERS-4, Russia's Kanopus-V and India's Resourcesat platforms, and distributes the data through the members' own ground stations [7; 8]. It gives the bloc a source of imagery for climate research, agriculture and disaster management that does not depend on Western providers.

As a model the constellation is instructive precisely because it is modest. Each agency keeps its own satellites and contributes data on agreed terms, so the

arrangement respects national ownership while delivering a genuine shared good. The newer connectivity initiatives discussed in the PartNIR forums aim to extend the same logic to digital infrastructure more broadly [5]. Pooled, sovereignty-respecting data infrastructure of this kind is the form of cooperation the bloc is most capable of sustaining, and it deserves more attention than the headline-grabbing currency debates.

Conditions for optimization

Financing and sequencing matter as much as design. The New Development Bank gives the bloc an instrument for funding digital infrastructure that most other emerging-market groupings lack, and directing its lending toward interoperable payment rails, shared data centres and open digital public goods would convert political declarations into assets that outlast any single chairship [14]. Sequencing should follow the evidence already on the table: begin with the tracks that work, payments, satellite data and digital public infrastructure, use them to build the habit and the trust that consensus politics rarely produces on its own, and let success in the low-conflict areas create room for the harder bargains over data and standards. Cooperation of this kind compounds, and the bloc has more to gain from a few completed systems than from another round of comprehensive but unimplemented frameworks.

What would it take to turn these openings into durable cooperation? The pattern across the five tracks suggests an answer. Cooperation works when it is built as an interoperable layer rather than an integrated system, when it preserves national control, and when a concrete shared interest is present. This points away from grand designs and toward a more modest method.

Three implications follow. First, coalitions of willing members can move ahead on specific projects without waiting for consensus among all ten, an approach of variable geometry that fits a heterogeneous bloc better than uniform participation. Second, interoperability and gradual, predictable harmonization are more realistic goals than common rules, and they ask less of members' sovereignty [11]. Third, cooperation should be organized around complementarities: India's services and

digital public infrastructure, China's hardware and scale, the engineering and resource strengths of Russia, Brazil and South Africa, and the capital of the Gulf members. None of this dissolve the underlying tension between sovereignty and integration, but it makes that tension manageable. The institutional thinness of the bloc remains the largest open problem, and even a light standing secretariat or a set of permanent technical working groups would improve follow-through without threatening members' autonomy.

Conclusion

Cooperation among the BRICS countries in information technology faces obstacles that are partly structural and partly ideational. The structural ones are the unevenness of digital development, dependence on technologies the bloc does not control, the rivalry between its two largest members and the weakness of its institutions. The ideational one is the competition among rival models of digital sovereignty, which places a single integrated digital order beyond political reach.

The prospects are real but uneven. They are strongest where a concrete shared interest meets a design that preserves national control: cross-border payments, interoperable data governance, digital public infrastructure, the building blocks of sovereign artificial intelligence and pooled satellite data. The central finding is that the obstacle and the opportunity share a single root. Digital sovereignty is what makes the members want to cooperate and what stops them from merging their systems. The task of optimization is therefore not mainly technical. It is a problem of governance design, of building interoperable and sovereignty-respecting layers in place of a unified system, and the bloc's progress in information technology will depend on how well it learns to do that.

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